

## ABSTRACT OF THE DISCLOSURE

The inventions disclosed herein are new complexes and catalysts comprising metal-ligand complexes or compositions of metal precursors and ligands (and optionally activators) that catalyze polymerization and copolymerization reactions, particularly with monomers that are olefins, diolefins or acetylenically unsaturated. These compositions can also polymerize monomers that have polar functionalities in homopolymerizations or copolymerizations. Also, diolefins in combination with ethylene or  $\alpha$ -olefins or 1,1-disubstituted olefins may be co-polymerized. The new catalyst compositions can be prepared by combining a metal precursor with a suitable ligand and, optionally, an activator or combination of activators. The main feature of this invention is the use of new metal ligand complexes to provide the active polymerization catalysts.